

AFPC Rock Check Program

Sample No. 2009-06

	Method #	# of Anal.	Grand Median	Std Dev
Moisture				
Ground Sample AFPC 9-2	101	15	0.05	0.011
Other (describe)	102	10	0.04	0.021
Method Group 100		25	0.04	0.01
BPL or P₂O₅				
Gravimetric AFPC 9-5	201	4	36.96	0.112
ICP-induced coupled plasma	202	1	37.09	0.000
Photometric-AFPC 9-6	203	14	36.67	0.198
Automated -AOAC 978.01-15th	204	9	36.76	0.179
Other(describe)	205	7	36.79	0.183
Method Group 200		35	36.76	0.20
BPL or P₂O₅ (on Dry Basis)				
Gravimetric AFPC 9-5	211	2	36.81	0.142
ICP-induced coupled plasma	212	1	37.11	0.000
Photometric-AFPC 9-6	213	9	36.76	0.028
Automated -AOAC 978.01-15th	214	9	36.78	0.163
Other(describe)	215	4	36.90	0.243
Method Group 210		25	36.80	0.11
Fe₂O₃				
Atomic Absorption-AFPC 9-12,13	301	5	0.48	0.067
ICP-induced coupled plasma	302	27	0.53	0.028
Other(describe)	303	2	0.51	0.004
Method Group 300		34	0.52	0.04
Al₂O₃				
Atomic Absorption-AFPC 9-16,17	401	4	0.18	0.129
ICP-induced coupled plasma	402	26	0.17	0.041
Other(describe)	403	2	0.16	0.004
Method Group 400		32	0.17	0.03
MgO				
Atomic Absorption-AFPC 9-18,19	501	4	1.02	0.125
ICP-induced coupled plasma	502	27	1.04	0.074
Other(describe)	503	2	1.04	0.097
Method Group 500		33	1.04	0.09
Acid Insoluble				
Insoluble-AFPC 9-8	601	19	1.22	0.119
Other(describe)	602	2	0.83	0.619
Method Group 600		21	1.22	0.13
CaO				
Gravimetric sulfate	701			
ICP-induced coupled plasma	702	13	51.66	0.556
Ceric Sulfate volumetric	703	1	54.92	0.000
Permanganate	704	4	52.57	0.427
EDTA Volumetric	705	5	52.73	0.593
Other(describe)	706	9	51.96	0.246
Method Group 700		32	52.06	0.92
CaO (on Dry Basis)				
Gravimetric sulfate	711			
ICP-induced coupled plasma	712	6	51.51	0.254
Ceric Sulfate volumetric	713			
Permanganate	714	3	52.74	0.122
EDTA Volumetric	715	3	52.58	2.425
Other(describe)	716	9	51.98	0.249
Method Group 710		24	52.13	0.73

	Method #	# of Anal.	Grand Median	Std Dev
Fluorine, F				
Volumetric-AFPC 9-37	801	1	2.25	0.000
Specific Ion Electrode	802	14	2.29	0.091
Other (describe)	803	4	2.31	14.659
Method Group 800		19	2.28	0.09
Arsenic, As				
Atomic Absorption	911			
ICP-induced coupled plasma	912	5	6.3	32.19
Other(describe)	913	3	7.0	6.16
Method Group 900		8	6.7	17.15
Cadmium, Cd				
Atomic Absorption	921			
ICP-induced coupled plasma	922	8	0.35	18.9
Other(describe)	923			
Method Group 910		8	0.35	18.9
Cobalt, Co				
Atomic Absorption	931			
ICP-induced coupled plasma	932	7	3	0.4
Other(describe)	933	2	4	0.2
Method Group 920		9	3.37	0.5
Mercury, Hg				
Atomic Absorption	941			
ICP-induced coupled plasma	942			
Other(describe)	943			
Method Group 930		0	#NUM!	
Molybdenum, Mo				
Atomic Absorption	951			
ICP-induced coupled plasma	952	7	4	4.2
Other(describe)	953	1	2	0.0
Method Group 940		8	3.30	3.2
Nickel, Ni				
Atomic Absorption	961			
ICP-induced coupled plasma	962	7	6	33.8
Other(describe)	963	3	5	21.3
Method Group 950		10	5.43	31.6
Lead, Pb				
Atomic Absorption	971			
ICP-induced coupled plasma	972	7	23	11.9
Other(describe)	973	3	24	8.7
Method Group 960		10	23.50	12.6
Selenium, Se				
Atomic Absorption	981			
ICP-induced coupled plasma	982	2	1	0.4
Other(describe)	983	1	8	0.0
Method Group 970		3	1.02	2.8
Zinc, Zn				
Atomic Absorption	991	1	31	0
ICP-induced coupled plasma	992	8	8	155
Other(describe)	993	1	9	0
Method Group 980		10	8.43	16

101 Ground Sample AFPC 9-2		
Lab	%	H ₂ O
24	0.17	-10.720
15	0.09	-3.127
Std Dev	0.06	-1.000
6	0.06	-0.893
6	0.06	-0.893
15	0.05	0.000
16	0.05	0.000
16	0.05	0.000
49	0.05	0.000
Median	0.05	0.000
16	0.04	0.893
16	0.04	0.893
24	0.04	0.893
51	0.04	0.893
77	0.04	0.893
77	0.04	0.893
Std Dev	0.04	1.000
30	0.02	2.680

102 Other (describe)		
Lab	%	H ₂ O
21	0.17	-6.456
13	0.08	-2.071
13	0.06	-1.096
Std Dev	0.06	-1.000
9	0.06	-0.853
26	0.04	-0.122
Median	0.04	0.000
9	0.04	0.122
55	0.04	0.122
21	0.03	0.365
55	0.03	0.365
33	0.02	0.853

201 Gravimetric AFPC 9-5		
Lab	%	P2O5
241	37.00	-0.402
77	36.99	-0.313
Median	36.96	0.000
50	36.92	0.313
Std Dev	36.84	1.000
26	36.61	3.082

202 ICP-induced coupled plasma		
Lab	%	P2O5
6	37.09	0.000
Median	37.09	0.000

203 Photometric-AFPC 9-6		
Lab	%	P2O5
16	36.83	-0.784
16	36.83	-0.784
33	36.79	-0.607
30	36.78	-0.556
16	36.75	-0.379
16	36.75	-0.379
6	36.74	-0.354
Median	36.67	0.000
92	36.60	0.354
92	36.60	0.354
9	36.54	0.657
9	36.50	0.885
Std Dev	36.47	1.000
60	36.45	1.112
78	28.96	38.986
78	28.82	39.694

204 Automated -AOAC 978.01-15th		
Lab	%	P2O5
77	36.82	-0.335
24	36.80	-0.223
15	36.79	-0.168
15	36.76	0.000
24	36.76	0.000
Median	36.76	0.000
13	36.66	0.558
Std Dev	36.58	1.000
13	36.55	1.173
21	36.54	1.228
21	36.20	3.127

205 Other(describe)		
Lab	%	P2O5
55	37.60	-4.430
Std Dev	36.97	-1.000
55	36.97	-0.984

51	36.80	-0.055
49	36.79	0.000
Median	36.79	0.000
51	36.77	0.109
Std Dev	36.61	1.000
36	36.51	1.531
19	36.46	1.805

211 Gravimetric AFPC 9-5			
Lab	%	P2O5	dB
77	37.00	-1.340	
Std Dev	36.96	-1.000	
Median	36.81	0.000	
Std Dev	36.67	1.000	
26	36.62	1.340	

212 ICP-induced coupled plasma			
Lab	%	P2O5	dB
6	37.11	0.000	
Median	37.11	0.000	

213 Photometric-AFPC 9-6			
Lab	%	P2O5	dB
16	36.84	-2.895	
16	36.84	-2.895	
33	36.80	-1.256	
Std Dev	36.79	-1.000	
30	36.79	-0.900	
6	36.76	0.000	
Median	36.76	0.000	
16	36.76	0.084	
16	36.76	0.084	
Std Dev	36.73	1.000	
9	36.55	7.447	
9	36.52	8.789	

214 Automated -AOAC 978.01-15th			
Lab	%	P2O5	dB
77	36.83	-0.345	
24	36.82	-0.270	
15	36.82	-0.262	
24	36.81	-0.222	
15	36.78	0.000	
Median	36.78	0.000	

13	36.68	0.590
Std Dev	36.61	1.000
21	36.60	1.078
13	36.58	1.218
21	36.21	3.471

215 Other(describe)			
Lab	%	P2O5	dB
55	37.61	-2.940	
Std Dev	37.14	-1.000	
55	36.98	-0.342	
Median	36.90	0.000	
51	36.81	0.342	
49	36.81	0.368	

301 Atomic Absorption-AFPC 9-12,13			
Lab	%	Fe2O3	
33	0.58	-1.489	
30	0.57	-1.340	
Std Dev	0.55	-1.000	
51	0.48	0.000	
60	0.48	0.000	
Median	0.48	0.000	
241	0.47	0.149	

302 ICP-induced coupled plasma			
Lab	%	Fe2O3	
77	0.63	-3.752	
77	0.63	-3.752	
9	0.58	-1.787	
9	0.56	-1.251	
Std Dev	0.55	-1.000	
50	0.55	-0.843	
78	0.55	-0.715	
78	0.55	-0.715	
6	0.54	-0.536	
55	0.53	-0.179	
55	0.53	-0.179	
15	0.53	0.000	
15	0.53	0.000	
16	0.53	0.000	
16	0.53	0.000	
Median	0.53	0.000	
13	0.52	0.179	

13	0.52	0.179
16	0.52	0.179
16	0.52	0.179
49	0.52	0.179
51	0.51	0.536
92	0.50	0.893
Std Dev	0.50	1.000
24	0.48	1.608
26	0.47	1.965
92	0.47	1.965
21	0.46	2.323
24	0.45	2.680
21	0.42	3.752

303 Other(describe)		
Lab	%	Fe2O3
36	0.51	-1.340
Std Dev	0.51	-1.000
Median	0.51	0.000
Std Dev	0.50	1.000
19	0.50	1.340

401 Atomic Absorption-AFPC 9-16,17		
Lab	%	Al2O3
30	0.79	-4.777
Std Dev	0.30	-1.000
241	0.18	-0.039
Median	0.18	0.000
33	0.17	0.039
51	0.13	0.350

402 ICP-induced coupled plasma		
Lab	%	Al2O3
78	1.73	-38.007
78	1.72	-37.764
24	0.22	-1.218
24	0.22	-1.218
Std Dev	0.21	-1.000
13	0.18	-0.244
16	0.18	-0.244
16	0.18	-0.244
21	0.18	-0.244
16	0.18	-0.122
16	0.18	-0.122

13	0.17	0.000
21	0.17	0.000
26	0.17	0.000
51	0.17	0.000
Median	0.17	0.000
9	0.17	0.122
9	0.16	0.244
92	0.15	0.487
49	0.14	0.731
92	0.14	0.731
Std Dev	0.13	1.000
77	0.12	1.218
6	0.11	1.462
77	0.10	1.705
55	0.09	2.071
55	0.08	2.095
15	0.08	2.193
15	0.08	2.193

403 Other(describe)		
Lab	%	Al2O3
19	0.16	-1.340
Std Dev	0.16	-1.000
Median	0.16	0.000
Std Dev	0.15	1.000
36	0.15	1.340

501 Atomic Absorption-AFPC 9-18,19		
Lab	%	MgO
33	1.20	-1.480
Std Dev	1.14	-1.000
51	1.05	-0.280
Median	1.02	0.000
60	0.98	0.280
Std Dev	0.89	1.000
30	0.74	2.200

502 ICP-induced coupled plasma		
Lab	%	MgO
77	1.19	-2.020
77	1.18	-1.885
50	1.13	-1.212
9	1.12	-1.077
Std Dev	1.11	-1.000

55	1.11	-0.943
92	1.11	-0.943
55	1.11	-0.929
9	1.09	-0.673
15	1.09	-0.673
15	1.09	-0.606
92	1.06	-0.269
6	1.05	-0.135
16	1.04	0.000
16	1.04	0.000
49	1.04	0.000
Median	1.04	0.000
16	1.03	0.135
16	1.03	0.135
26	1.02	0.269
21	1.00	0.539
24	1.00	0.539
51	1.00	0.539
13	0.99	0.673
21	0.97	0.943
24	0.97	0.943
Std Dev	0.97	1.000
13	0.92	1.616
78	0.45	8.013
78	0.45	8.013

503 Other(describe)		
Lab	%	MgO
19	1.17	-1.340
Std Dev	1.14	-1.000
Median	1.04	0.000
Std Dev	0.94	1.000
36	0.91	1.340

601 Insoluble-AFPC 9-8		
Lab	%	Al
21	2.63	-11.809
51	2.05	-6.951
26	1.73	-4.229
24	1.35	-1.047
Std Dev	1.34	-1.000
24	1.34	-0.963
30	1.32	-0.838
6	1.29	-0.586

13	1.28	-0.503
9	1.23	-0.042
16	1.22	0.000
16	1.22	0.000
Median	1.22	0.000
16	1.18	0.335
16	1.18	0.335
9	1.18	0.377
15	1.16	0.503
33	1.16	0.503
13	1.14	0.670
15	1.13	0.796
Std Dev	1.10	1.000
21	1.05	1.424

602 Other(describe)		
Lab	%	Al
19	1.66	-1.340
Std Dev	1.45	-1.000
Median	0.83	0.000
Std Dev	0.21	1.000
78	0.00	1.340

701 Gravimetric sulfate		
Lab	%	CaO
Median	0.00	0.000

702 ICP-induced coupled plasma		
Lab	%	CaO
50	54.32	-4.784
77	53.30	-2.950
77	53.20	-2.770
Std Dev	52.22	-1.000
6	52.06	-0.719
49	51.69	-0.054
16	51.66	0.000
16	51.66	0.000
Median	51.66	0.000
92	51.34	0.576
16	51.32	0.621
16	51.32	0.621
92	51.15	0.917
Std Dev	51.10	1.000
78	46.02	10.153

78 46.00 10.189

703 Ceric Sulfate volumetric			
Lab	%	CaO	
241	54.92		0.000
Median	54.92		0.000

704 Permanganate			
Lab	%	CaO	
21	52.80		-0.550
30	52.73		-0.386
Median	52.57		0.000
21	52.40		0.386
Std Dev	52.14		1.000
60	51.50		2.493

705 EDTA Volumetric			
Lab	%	CaO	
26	59.04		-10.627
55	53.35		-1.045
Std Dev	53.32		-1.000
55	52.73		0.000
Median	52.73		0.000
9	52.56		0.295
9	52.54		0.320

706 Other(describe)			
Lab	%	CaO	
51	52.38		-1.705
Std Dev	52.21		-1.000
15	52.12		-0.650
15	52.07		-0.447
13	52.06		-0.406
24	51.96		0.000
Median	51.96		0.000
33	51.77		0.772
13	51.74		0.893
Std Dev	51.71		1.000
19	51.50		1.868
24	50.90		4.325

711 Gravimetric sulfate			
Lab	%	CaO	dB
Median	0.00		0.000

712 ICP-induced coupled plasma			
Lab	%	CaO	dB
6	52.09		-2.288
Std Dev	51.76		-1.000
16	51.68		-0.670
16	51.68		-0.670
Median	51.51		0.000
16	51.34		0.670
16	51.34		0.670
Std Dev	51.26		1.000
78	46.02		21.659

713 Ceric Sulfate volumetric			
Lab	%	CaO	dB
Median	0.00		0.000

714 Permanganate			
Lab	%	CaO	dB
21	52.82		-0.618
30	52.74		0.000
Median	52.74		0.000
Std Dev	52.62		1.000
21	52.49		2.062

715 EDTA Volumetric			
Lab	%	CaO	dB
26	59.06		-2.669
Std Dev	55.01		-1.000
9	52.58		0.000
Median	52.58		0.000
9	52.56		0.011

716 Other(describe)			
Lab	%	CaO	dB
51	52.40		-1.686
Std Dev	52.23		-1.000
15	52.15		-0.663
15	52.11		-0.536
13	52.09		-0.443
24	51.98		0.000
Median	51.98		0.000
13	51.78		0.800
33	51.78		0.804

Std Dev	51.73		1.000
19	51.50		1.929
24	50.98		4.009

801 Volumetric-AFPC 9-37			
Lab	%	Fluorine, F	
33	2.25		0.000
Median	2.25		0.000

802 Specific Ion Electrode			
Lab	%	Fluorine, F	
55	3.30		-11.048
15	2.41		-1.258
15	2.40		-1.203
Std Dev	2.38		-1.000
24	2.38		-0.930
49	2.33		-0.438
13	2.30		-0.109
30	2.30		-0.109
Median	2.29		0.000
9	2.28		0.109
21	2.26		0.328
9	2.25		0.492
21	2.24		0.547
13	2.23		0.656
Std Dev	2.20		1.000
24	2.18		1.258
51	2.16		1.422

803 Other(describe)			
Lab	%	Fluorine, F	
16	80.46		-5.331
Std Dev	16.97		-1.000
36	2.36		-0.003
Median	2.31		0.000
77	2.26		0.003
77	2.19		0.008

911 Atomic Absorption-AFPC 9-18,19			
Lab	ppm	Arsenic, As	
Median	0.0		0.000

912 ICP-induced coupled plasma			
Lab	ppm	Arsenic, As	

77	<1		0.000
55	49.6		-1.345
55	49.0		-1.326
Std Dev	38.5		-1.000
78	6.3		0.000
Median	6.3		0.000
78	5.9		0.014
26	1.0		0.165

913 Other(describe)			
Lab	ppm	Arsenic, As	
6	22.0		-2.433
Std Dev	13.2		-1.000
51	7.0		0.000
Median	7.0		0.000
13	5.5		0.247

921 Atomic Absorption-AFPC 9-12,13			
Lab	ppm	Cadmium, Cd	
6	<2		0.000
Median	0		0.000

922 ICP-induced coupled plasma			
Lab	ppm	Cadmium, Cd	
78	100		-5.257
78	99		-5.223
Std Dev	19		-1.000
26	1		-0.034
51	0		-0.003
Median	0		0.000
77	0		0.003
77	0		0.005
55	0		0.018
55	0		0.018

923 Other(describe)			
Lab	ppm	Cadmium, Cd	
13	<0.09		0.000
Median	0		0.000

931 Atomic Absorption-AFPC 9-16,17			
Lab	ppm	Cobalt, Co	
Median	0		0.000

932 ICP-induced coupled plasma		
Lab	ppm	Cobalt, Co
78	<1	0.000
78	<1	0.000
24	5	-4.047
55	4	-1.340
Std Dev	3	-1.000
55	3	-0.684
50	3	0.000
Median	3	0.000
51	3	0.328
77	3	0.328
77		0.328

933 Other(describe)		
Lab	ppm	Cobalt, Co
6	4	-1.340
Std Dev	4	-1.000
Median	4	0.000
Std Dev	3	1.000
13	3	1.340

941 Atomic Absorption-AFPC 9-18,19		
Lab	ppm	Mercury, Hg
Median	0.0	0.000

942 ICP-induced coupled plasma		
Lab	ppm	Mercury, Hg
Median	0.0	0.000

943 Other(describe)		
Lab	ppm	Mercury, Hg
6	<6	0.000
13	<0.07	0.000
Median		0.000

951 Atomic Absorption-AFPC 9-18,19		
Lab	ppm	Iolybdenum, Mo
Median	0	0.000

952 ICP-induced coupled plasma		
Lab	ppm	Iolybdenum, Mo
78	15	-2.589
78	11	-1.497

Std Dev	9	-1.000
55	5	-0.108
55	4	0.000
Median	4	0.000
50	2	0.509
77	2	0.566
77	1	0.806

953 Other(describe)		
Lab	ppm	Iolybdenum, Mo
6	<3	0.000
13	<0.54	0.000
51	2	0.000
Median		0.000

961 Atomic Absorption-AFPC 9-12,13		
Lab	ppm	Nickel, Ni
Median	0	0.000

962 ICP-induced coupled plasma		
Lab	ppm	Nickel, Ni
78	99	-2.759
78	95	-2.626
Std Dev	40	-1.000
55	6	-0.003
55	6	0.000
Median	6	0.000
77	5	0.025
77	5	0.025
51	4	0.055

963 Other(describe)		
Lab	ppm	Nickel, Ni
6	<2	0.000
19	61	-2.642
Std Dev	26	-1.000
13	5	0.000
Median	5	0.000
51	4	0.038

971 Atomic Absorption-AFPC 9-16,17		
Lab	ppm	Lead, Pb
Median	0	0.000

972 ICP-induced coupled plasma		
Lab	ppm	Lead, Pb
55	37	-1.198
55	35	-1.040
Std Dev	35	-1.000
26	27	-0.294
77	23	0.000
Median	23	0.000
77	21	0.168
Std Dev	11	1.000
78	9	1.178
78	7	1.346

973 Other(describe)		
Lab	ppm	Lead, Pb
6	38	-1.603
Std Dev	33	-1.000
51	24	0.000
Median	24	0.000
Std Dev	15	1.000
13	15	1.077

981 Atomic Absorption-AFPC 9-18,19		
Lab	ppm	Selenium, Se
Median	0	0.000

982 ICP-induced coupled plasma		
Lab	ppm	Selenium, Se
77	<1	0.000
55	1	-1.340
Std Dev	1	-1.000
Median	1	0.000
Std Dev	0	1.000
55	0	1.340

983 Other(describe)		
Lab	ppm	Selenium, Se
13	8	0.000
Median	8	0.000

991 Atomic Absorption-AFPC 9-18,19		
Lab	ppm	Zinc, Zn
60	31	0.000
Median	31	0.000

992 ICP-induced coupled plasma		
Lab	ppm	Zinc, Zn
78	806	-5.135
78	793	-5.051
Std Dev	163	-1.000
50	23	-0.099
26	8	0.000
77	8	0.000
Median	8	0.000
55	8	0.001
55	7	0.009
77	6	0.013

993 Other(describe)		
Lab	ppm	Zinc, Zn
6	<8	0.000
13	9	0.000
Median	9	0.000

